



#5

SEQUENCE LISTING

<110> BINLEY, JAMES M
SCHUELKE, NORBERT
OLSON, WILLIAM C
PAUL, MADDON J
JOHN, MOORE P

<120> STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF

<130> 2048/59331az

<140> 10/032,162

<141> 2001-12-21

<150> 09/602,864

<151> 2000-06-23

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<170> PatentIn version 3.1

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<212> PRT

<213> Human immunodeficiency virus type 1

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Arg Arg Val Val Gln Arg Glu
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<213> Human immunodeficiency virus type 1

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Glu Ala Thr Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp
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Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp
 35 40 45

Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn
 50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser
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Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys
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Val Thr Leu Asn
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<213> Artificial sequence

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 <213> ARTIFICIAL SEQUENCE

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 <213> Human immunodeficiency virus type 1

<400> 11

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<210> 12

<211> 1929

<212> DNA

<213> Human immunodeficiency virus type 1

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20

25

30

Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp
 35 40 45

Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn
 50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser
 65 70 75 80

Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys
 85 90 95

Val Thr Leu Asn Cys Lys Asp Val Asn Ala Thr Asn Thr Thr Asn Asp
 100 105 110

Ser Glu Gly Thr Met Glu Arg Gly Glu Ile Lys Asn Cys Ser Phe Asn
 115 120 125

Ile Thr Thr Ser Ile Arg Asp Glu Val Gln Lys Glu Tyr Ala Leu Phe
 130 135 140

Tyr Lys Leu Asp Val Val Pro Ile Asp Asn Asn Asn Thr Ser Tyr Arg
 145 150 155 160

Leu Ile Ser Cys Asp Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Ile
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Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala
 180 185 190

Ile Leu Lys Cys Asn Asp Lys Thr Phe Asn Gly Lys Gly Pro Cys Lys
 195 200 205

Asn Val Ser Thr Val Gln Cys Thr His Gly Ile Arg Pro Val Val Ser
 210 215 220

Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val Val Ile
 225 230 235 240

Arg Ser Asp Asn Phe Thr Asn Asn Ala Lys Thr Ile Ile Val Gln Leu
 245 250 255

Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn Asn Thr Arg
 260 265 270

Lys Ser Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Gly Glu
 275 280 285

Ile Ile Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys
 290 295 300

Trp Asn Asp Thr Leu Lys Gln Ile Val Ile Lys Leu Arg Glu Gln Phe
 305 310 315 320

Glu Asn Lys Thr Ile Val Phe Asn His Ser Ser Gly Gly Asp Pro Glu
 325 330 335

Ile Val Met His Ser Phe Asn Cys Glu Gly Glu Phe Phe Tyr Cys Asn
 340 345 350

Ser Thr Gln Leu Phe Asn Ser Thr Trp Asn Asn Asn Thr Glu Gly Ser
 355 360 365

Asn Asn Thr Glu Gly Asn Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln
 370 375 380

Ile Ile Asn Met Trp Gln Glu Val Gly Lys Ala Met Tyr Ala Pro Pro
 385 390 395 400

Ile Arg Gly Gln Ile Arg Cys Ser Ser Asn Ile Thr Gly Leu Leu Leu
 405 410 415

Thr Arg Asp Gly Gly Ile Asn Glu Asn Gly Thr Glu Ile Phe Arg Pro
 420 425 430

Gly Gly Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Phe Tyr Lys Tyr
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Lys Val Val Lys Ile Glu Pro Leu Gly Val Ala Pro Thr Lys Cys Lys
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Arg Arg Val Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val
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Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser
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Met Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln
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Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln Arg Met Leu
 515 520 525

Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala
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Val Glu Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys
 545 550 555 560

Ser Gly Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp
565 570 575

Ser Asn Lys Ser Leu Asp Arg Ile Trp Asn Asn Met Thr Trp Met Glu
580 585 590

Trp Glu Arg Glu Ile Asp Asn Tyr Thr Ser Glu Ile Tyr Thr Leu Ile
595 600 605

Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu
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Leu Trp Tyr

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<211> 1738
<212> DNA
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Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val Val Ile
 165 170 175

Arg Ser Asp Asn Phe Thr Asn Asn Ala Lys Thr Ile Ile Val Gln Leu
 180 185 190

Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn Asn Thr Arg
 195 200 205

Lys Ser Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Gly Glu
 210 215 220

Ile Ile Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys
 225 230 235 240

Trp Asn Asp Thr Leu Lys Gln Ile Val Ile Lys Leu Arg Glu Gln Phe
 245 250 255

Glu Asn Lys Thr Ile Val Phe Asn His Ser Ser Gly Gly Asp Pro Glu
 260 265 270

Ile Val Met His Ser Phe Asn Cys Gly Gly Glu Phe Phe Tyr Cys Asn
 275 280 285

Ser Thr Gln Leu Phe Asn Ser Thr Trp Asn Asn Asn Thr Glu Gly Ser
 290 295 300

Asn Asn Thr Glu Gly Asn Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln
 305 310 315 320

Ile Ile Asn Met Trp Gln Glu Val Gly Lys Ala Met Tyr Ala Pro Pro
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Ile Arg Gly Gln Ile Arg Cys Ser Ser Asn Ile Thr Gly Leu Leu Leu
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Thr Arg Asp Gly Gly Ile Asn Glu Asn Gly Thr Glu Ile Phe Arg Pro
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Gly Gly Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr
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Lys Val Val Lys Ile Glu Pro Leu Gly Val Ala Pro Thr Lys Cys Lys
 385 390 395 400

Arg Arg Val Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val
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Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser
 420 425 430

Met Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln
 435 440 445

Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln Arg Met Leu
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Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala
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Val Glu Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys
 485 490 495

Ser Gly Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp
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Ser Asn Lys Ser Leu Asp Arg Ile Trp Asn Asn Met Thr Trp Met Glu

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520

525

Trp Glu Arg Glu Ile Asp Asn Tyr Thr Ser Glu Ile Tyr Thr Leu Ile
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Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu
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Leu Trp Tyr

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Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp
 35 40 45

Pro Asn Pro Gln Glu Val Val Leu Glu Asn Val Thr Glu His Phe Asn
 50 55 60

Met Trp Lys Asn Asn Met Val Glu Gln Met Gln Glu Asp Ile Ile Ser
 65 70 75 80

Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys
 85 90 95

Val Thr Leu Asn Cys Lys Asp Val Asn Ala Thr Asn Thr Thr Asn Asp
 100 105 110

Ser Glu Gly Thr Met Glu Arg Gly Glu Ile Lys Asn Cys Ser Phe Asn
 115 120 125

Ile Thr Thr Ser Ile Arg Asp Glu Val Gln Lys Glu Tyr Ala Leu Phe
 130 135 140

Tyr Lys Leu Asp Val Val Xaa Ile Asp Asn Asn Asn Thr Ser Tyr Arg
 145 150 155 160

Leu Ile Ser Cys Asp Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Ile
 165 170 175

Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala
 180 185 190

Ile Leu Lys Cys Asn Asp Lys Thr Phe Asn Gly Lys Xaa Pro Cys Lys
 195 200 205

Asn Val Ser Thr Xaa Gln Cys Thr His Gly Ile Arg Pro Val Val Ser
 210 215 220

Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Val Val Ile
 225 230 235 240

Arg Ser Asp Asn Phe Thr Asn Asn Ala Lys Thr Ile Ile Val Gln Leu
 245 250 255

Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn Asn Gly Ala
 260 265 270

Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Arg Ala Lys Trp Asn
 275 280 285

Asp Thr Leu Lys Gln Ile Val Ile Lys Leu Arg Glu Gln Phe Glu Asn
 290 295 300

Lys Thr Ile Val Phe Asn His Ser Ser Gly Gly Asp Pro Glu Ile Val
 305 310 315 320

Met His Ser Phe Asn Cys Gly Gly Glu Phe Phe Tyr Cys Asn Ser Thr
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Gln Leu Phe Asn Ser Thr Trp Asn Asn Asn Thr Glu Gly Ser Asn Asn
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Asn Met Trp Gln Glu Val Gly Lys Ala Met Tyr Ala Pro Pro Ile Arg
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Asp Gly Gly Ile Asn Glu Asn Gly Thr Glu Ile Phe Arg Pro Gly Gly
 405 410 415

Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val
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Val Lys Ile Glu Pro Leu Gly Val Ala Pro Thr Lys Cys Lys Arg Arg
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Val Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Phe Leu
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Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Met Thr
 465 470 475 480

Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln Gln Gln
 485 490 495

Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln Arg Met Leu Gln Leu
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Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Val Glu
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Arg Tyr Leu Gly Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly
 530 535 540

Lys Leu Ile Cys Cys Thr Ala Val Pro Trp Asn Ala Ser Trp Ser Asn

